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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/798,820	03/11/2004	Tetsuo Shibamura	09792909-5843	7109

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EXAMINER
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YAMNITZKY, MARIE ROSE

ART UNIT	PAPER NUMBER
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1774

DATE MAILED: 11/08/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/798,820

Applicant(s)

SHIBANUMA ET AL.

Examiner

Marie R. Yamnitzky

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) OR THIRTY (30) DAYS, WHICHEVER IS LONGER, FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

*Supplemental*

- 1) ☒ Responsive to communication(s) ~~filed on~~ mailed on 31 October 2005.
- 2a) ☐ This action is FINAL. 2b) ☒ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 11-42 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 11-42 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☐ The drawing(s) filed on \_\_\_\_\_ is/are: a) ☐ accepted or b) ☐ objected to by the Examiner.
- Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a). Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All b) ☐ Some \* c) ☐ None of:
- ☐ Certified copies of the priority documents have been received.
  - ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
  - ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).

\* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- ☐ Notice of References Cited (PTO-892)
- ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- ☒ Interview Summary (PTO-413)  
Paper No(s)/Mail Date 11032005.
- ☐ Notice of Informal Patent Application (PTO-152)
- ☐ Other: \_\_\_\_\_

1. This Office action supplements the non-final Office action mailed October 31, 2005. The issues raised in this supplemental action are in addition to the issues raised in the October 31<sup>st</sup> action. The time for responding to the October 31<sup>st</sup> action is restarted with the mailing of this supplemental action.

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

2. The following specific issue is added to the rejection of claims 11-16, 23-36 and 39-42 under 35 U.S.C. 112, second paragraph, as set forth on pages 4-5 of the October 31<sup>st</sup> action:

The fifth-sixth lines following formula (III) in claim 29 name n,n-dimethyl-, n,n,n-trimethyl-, n-ethyl-, n,n-diethyl- and n,n,n-triethylphenyl groups. The use of “n”, “n,n” and “n,n,n” in these instances is confusing because the n’s do not indicate the position of a methyl or ethyl substituent on the phenyl group, and methyl and ethyl do not have different isomeric forms that would necessitate the use of “n” to distinguish normal from “iso” or “tert” forms.

3. Claims 23-25, 27, 29-31 and 33 are rejected under 35 U.S.C. 103(a) as being unpatentable over Nakada (EP 0 564 224 A2).

Nakada’s device of Example 2 is similar to a device as claimed in present claims 23-25, 27, 29-31 and 33. Nakada’s device of Example 2 utilizes the compound of formula (40) as shown on page 14 in an electron transport layer. Nakada’s compound of formula (40) is a 1,10-

phenanthroline derivative having an unsubstituted aryl (phenyl) group at the 4- and 7-positions, and an alkyl (methyl) group at the 2- and 9-positions of the 1,10-phenanthroline.

The 1,10-phenanthroline derivatives that may be used for Nakada's devices may have one or more substituted or unsubstituted aryl groups as substituents at any of the 2- to 9-positions of the 1,10-phenanthroline. For example, see page 2, lines 23-41.

The bathophenanthroline compounds defined in present independent claims 23 and 29 are 1,10-phenanthroline derivative having an unsubstituted aryl (phenyl) group at the 4- and 7-positions, and having an aryl group selected from specific aryl groups at the 2- and 9-positions. The specific aryl groups set forth in claim 23 include alkyl-substituted phenyl groups ("4-n-propylphenyl....4-sec-butylphenyl group"). The specific aryl groups set forth in claim 29 include a 1-naphthyl group, various alkyl-substituted phenyl groups ("4-methylphenyl...n-tert-butylphenyl group") and an aryl-substituted phenyl group ("phenylphenyl").

Nakada discloses 1,10-phenanthroline derivatives having substituents at the 2-, 4-, 7- and 9-positions, including compounds having an unsubstituted phenyl group at the 4- and 7-positions (e.g. see formula (40) on p. 14), and including compounds having an aryl group at the 2- and 9-positions (e.g. see formula (41) on p. 15 and formula (47) on p. 16). Nakada discloses 1,10-phenanthroline derivatives substituted with 1-naphthyl groups at the 2- and 9-positions (formula (47)). Nakada also discloses 1,10-phenanthroline derivatives substituted with alkyl-substituted phenyl groups or aryl-substituted phenyl groups (formulae (42), (43) and (44)). Nakada does not disclose any specific example of a 1,10-phenanthroline derivative having an unsubstituted phenyl group at the 4- and 7-positions and any of the specific aryl groups recited in present claims 23

and 29 at the 2- and 9-positions, though derivatives within the scope of compounds of formula (III) as defined in claims 23 and 29 are within the scope of Nakada's disclosure.

It would have been *prima facie* obvious to one of ordinary skill in the art at the time of the invention to make 1,10-phenanthroline derivatives within the scope of Nakada's disclosure and similar to the specific derivatives disclosed by Nakada, and use those derivatives to make organic EL devices, with the expectation that 1,10-phenanthroline derivatives that are similar in structure would have similar properties and could be used for Nakada's purposes. For example, one of ordinary skill in the art at the time of the invention, given Nakada's compounds of formulae (40), (41) and (47), would have reasonably expected that compounds having a phenyl group at each of the 2-, 4-, 7- and 9-positions, or compounds having a phenyl group at each of the 4- and 7-positions and a 1-naphthyl group at each of the 2- and 9-positions, would have similar properties and could be used in an organic EL device as taught by Nakada. One of ordinary skill in the art also would have expected that similar compounds having alkyl-substituted phenyl groups or aryl-substituted phenyl groups would have similar properties and could be used for Nakada's purposes since Nakada discloses alkyl-substituted phenyl groups and aryl-substituted phenyl groups as substituents.

Although Nakada describes the layer made of compound (40) as an electron transport layer rather than a hole-blocking layer, an electron transport layer made of compound (40) or compounds similar to compound (40) will also inherently function as a hole-blocking layer.

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4. Claims 23-34 and 39-42 are provisionally rejected under the judicially created doctrine of obviousness-type double patenting as being unpatentable over claims 11 and 12 of copending Application No. 11/162,076. Although the conflicting claims are not identical, they are not patentably distinct from each other.

Both sets of claims are drawn to an electroluminescent device comprising a layer comprising a bathophenanthroline derivative. The bathophenanthroline compound as defined in present claims 23 and 29 is within the scope of the bathophenanthroline derivative required for the device of copending claims 11 and 12. One of ordinary skill in the art would have been motivated by copending claim 12 to select specific Ar<sup>1</sup> and Ar<sup>2</sup> groups as required by the present claims. All of the specific aryl groups recited in present claim 23 are recited in copending claim 12, and all but the last two of the specific aryl groups recited in present claim 29 are also recited in copending claim 12.

This is a provisional obviousness-type double patenting rejection because the conflicting claims have not in fact been patented.

5. Any inquiry concerning this communication should be directed to Marie R. Yamnitzky at telephone number (571) 272-1531. The examiner works a flexible schedule but can generally be reached at this number from 6:30 a.m. to 4:00 p.m. Monday, Tuesday, Thursday and Friday, and every other Wednesday from 6:30 a.m. to 3:00 p.m.

The current fax number for all official faxes is (571) 273-8300. (Unofficial faxes to be sent directly to examiner Yamnitzky can be sent to (571) 273-1531.)

MRY  
November 03, 2005



MARIE YAMNITZKY  
PRIMARY EXAMINER

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